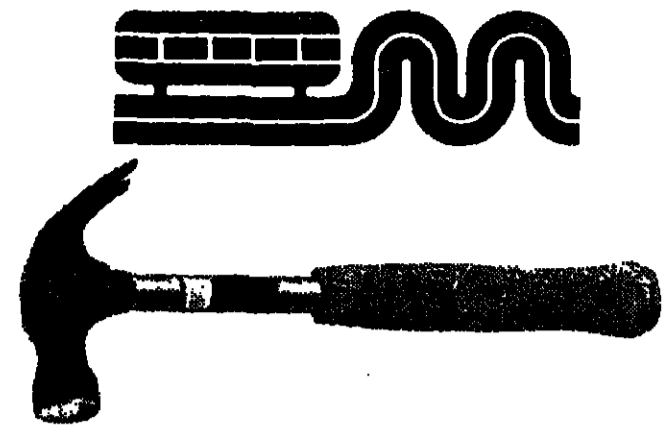


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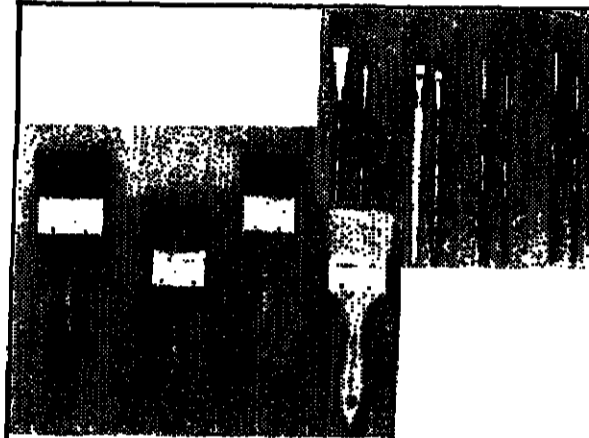
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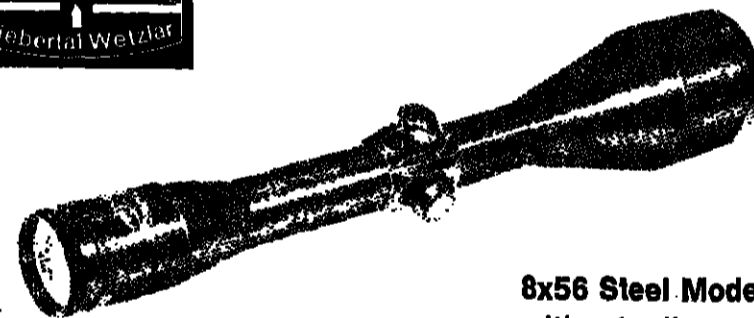
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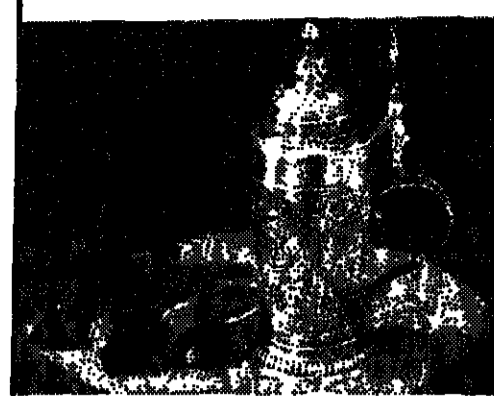
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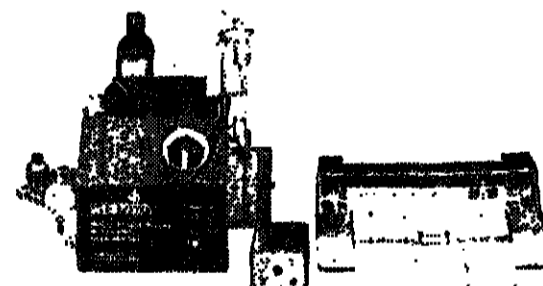
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## Belgrade CSCE conference fails to meet deadline

The Belgrade conference convened on 4 October to review the 1975 Helsinki accords will not succeed in reaching a conclusion this year - just as Western and neutral diplomats anticipated during the preparatory conference last summer.

They accordingly made provision for a further session of the conference from mid-January to mid-February should delegates fail to reach agreement on a draft final document by 22 December.

The final document has been on the Belgrade agenda for weeks but the conference cannot be said to be anywhere near agreement on a draft version.

The thirty-five delegations have submitted no fewer than 100 proposals, some of which are so diametrically opposed to each other that compromise formulas will not always prove possible, given the varying interests of East Bloc and Western participants.

The Czech and GDR delegations, for instance, have called for official under-

takings to ensure that the mass media no longer "intervene in the domestic affairs of other countries."

Western and neutral countries, on the other hand, are backing a Swiss resolution calling for an improvement in working conditions for foreign correspondents and for a freer flow of information.

So it is that the Eastern Bloc, on the pretext of a guarantee of security and cooperation in Europe, is calling for the introduction of press censorship in the West, whereas the non-socialist countries are calling for a gradual relaxation of this selfsame censorship in the East.

It goes without saying that these viewpoints will remain unchanged for some time to come - just as it will take time to draft proposals acceptable to all 35 countries represented at the Belgrade conference.

The Soviet Union is keen to bring the proceedings to a conclusion, but it was agreed at the preparatory talks that the Belgrade conference cannot be declared closed until agreement has been reached on a "substantial" final document and the date and venue of a further review conference.

Moscow is now keen to progress without further delay to sessions at which the draft can be finalised, yet the Soviet delegation, eager though it may be to bring the conference to a conclusion, is unwilling to equip the conference with the wherewithal.

This wherewithal, as the West sees it, consists of the full conference and two working parties to edit the draft, plus

further working parties to deal with the following main topics:

- principles of cooperation, including measures designed to inspire confidence;

- scientific and technological, trade and environmental cooperation;

- improvements in individual contacts and the free flow of information, and in cultural and educational cooperation.

The working parties responsible for these various baskets were, it was decided last summer, to hold their final sessions on 16 December.

In the circumstances it might well have been appropriate to designate them as editorial committees and allow them to get on with the job of formulating drafts. But Eastern Bloc delegations felt unable to agree to this proposal.

The fact of the matter is that the Eastern Bloc countries are finding the negative conclusions reached by the three working parties hard to stomach.

They are not interested in a detailed review of the implementation of the Helsinki accords. What they want is a final document framed in more general terms - and as soon as possible.

Siegfried Löffler  
(Kleiner Nachrichten, 14 December 1977)



'Just let me catch you mentioning human rights again!'  
(Cartoon: Gabriel Ross/Kleiner Nachrichten)

## Bonn backs anti-terrorist pledge in Belgrade

All acts of terrorist violence are to be expressly condemned in the final document of the Belgrade CSCE review conference.

The Belgrade communiqué is not only to pillory the use of force by terrorists but also to state the signatories' intention of backing an international agreement against hostage-taking that is to be proposed to the United Nations.

This was the gist of the proposal submitted to the full session of the Belgrade conference on 14 December by Per Fischer, head of the Bonn delegation.

Eighteen Western and neutral countries backed the move unflinchingly and a number of other delegations promised support. The Eastern Bloc countries, however - and Yugoslavia too - adopted a wait-and-see attitude.

In his address to the conference Herr Fischer noted that the world is confronted by a new form of terrorist resort to crime so dangerous that individual governments were powerless to deal with it singlehandedly.

"The use of force by terrorists such as the Baader-Meinhof group has reached such proportions in an age of mobility and technical perfection that intergovernmental cooperation is a 'must'."

"Then and then only will it be possible to deal effectively with this new form of international criminal activity."

Over the past decade, Herr Fischer continued, this phenomenon has spanned the world like a malignant tumour, especially in its most repugnant form, that of taking innocent people hostage.

It would be incomprehensible, Bonn's chief delegate claimed, if the Belgrade conference were not to deal with this particularly dangerous new manifestation of inhumanity, even though it might not

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## Schmidt favours 1980 summit

Nato countries are beginning to come to terms with the idea that a fresh Helsinki review conference ought to be held in 1980 or so 'at political level.'

Whether the conference is a summit meeting, as envisaged by Bonn Chancellor Helmut Schmidt, or a gathering of Foreign Ministers or, indeed, a combination of encounters between specialists and politicians remains to be seen.

Bonn is, however, given to understand that its Nato and Common Market partners are thinking in terms of a successor to the current Belgrade conference.

When Herr Schmidt, during his 1. December talks with Premier Giulio Andreotti of Italy in Verona, called for a fresh summit meeting of European heads of government he did so to the surprise of many observers of the political scene.

Alois Mertes, a Christian Democratic Bundestag deputy who is one of the Bonn Opposition's foreign policy spokesmen, referred to the Chancellor's proposal as a "premature shot from the hip."

True enough, the Chancellor's public statement had not been previously ag-

reed at government level. Yet it is only fair to add that the Foreign Office has long been aware of Herr Schmidt's personal preference for summit meetings unhampered by what he considers to be bureaucratic deadweight.

The Foreign Office has also long known that the Chancellor favours, in the CSCE context, a repetition of the 1975 Helsinki summit.

Chancellor Schmidt agrees with Foreign Minister Hans-Dietrich Genscher that multilateral detente must continue beyond the current Belgrade CSCE review conference, leading in two and a half years or so to a new conference, this time at political level.

The aim is to prevent East-West ties in Europe from becoming mere routine and ensure that they are always given fresh political stimulus, to quote a leading Bonn diplomat.

Besides, well-informed sources com-





THE ECONOMY

Dollar's nosedive hits German exports

The US dollar, which has been weak for some time, has now begun tumbling on foreign exchange markets.

Only a few weeks ago, during his visit to Bonn, US Secretary of the Treasury Michael Blumenthal gave assurances that his government would attempt to stabilise the dollar.

It would seem that the world's most mighty economic power is not in a position to pay its foreign trade bill.

A goodly proportion of this deficit (some 20,000 million dollars) is due to oil imports.

This uncertainty has become the prime risk factor today, making it virtually impossible to prognosticate for next year.

Washington has for some time been prodding the Bonn government to contribute more towards boosting the international economy.

Monetary uncertainty and the risk it entails for our export business have all but eliminated any inclination to invest.

The abrupt and massive devaluation of the dollar — or revaluation of the deutschmark — has dealt a severe blow to the development of export business.

Equally dangerous is the thus engendered cheapness of imports, which is tantamount to importing unemployment.

Foreign competition on home markets has even in past years hit certain of the domestic industries hard.

All this can hardly be intended as America's contribution towards curing the West's economy.

It is the capital goods industry in particular which makes or breaks an economy and whose production capacities are largely unutilised today.

Mechanical engineering, for instance, the largest group in this sector, must find markets abroad for more than two thirds of its output.

In other words, if our export opportu-

nities are curtailed still further and if our industry, which is burdened and weakened by the world's highest wage costs, is hampered as a result of the high exchange rate of the deutschmark, we shall be hit in the most vital and vulnerable spot.

In 1977, the volume of exports in real terms will probably have risen by a mere four or five per cent instead of by the nine per cent originally predicted by the Advisory Council of Economic Experts, or Five Wise Men.

We have already noticeably suffered on foreign markets where the decisive element in competition is the price rather than quality, and there was clearly a retrogressive tendency this year as regards Germany's share in world trade.

Up to now business has coped rather well with the steadily rising value of the deutschmark on international foreign exchange markets.

But whether we weather such fluctuations or not depends on how they occur and what is happening right now is simply too much and can lead to a collapse.

Since the beginning of 1976 the deutschmark has gained more than twenty per cent on the dollar.

It is conceivable that the dollar's tumbling will be halted temporarily, as happened last July.

The reason for this development is of a structural nature and it will be impossible to remedy the situation without drastic energy-saving measures in the United States.

If the present exchange rate of the dollar remains as it is, or if the deutschmark becomes even more expensive, then there is but one chance left for our economy.

We must put up a dogged resistance to further costs, taxes, social security expenses, all the way to an embargo on further wage increases.

But all this would presuppose a wage

policy that is based on common interests. It is simply untrue that, as Eugen Loderer, general secretary of IG Metall, the metalworkers union, said a few days ago on television, the redistribution of incomes in favour of business has proved ineffectual and has not provided a single unemployed worker with a job.

What redistribution? The undeniable fact is that profits have clearly diminished in 1977, and that a redistribution is taking place in favour of consumption and at the cost of investment — and all that after signs of improving profits had become discernible in 1976.

In 1974 there were the highest wage increases, namely thirteen per cent, and the lowest increase in consumption, namely 0.3 per cent.

No businessman would be foolish enough to oppose increased purchasing power for the consumer.

In some sectors, as for instance in the automobile industry, the service industries and the State, employment increased. Yet it fell in other important industries such as chemicals, mechanical engineering and construction.

As a result, the number of unemployed, which had fallen in 1976, began to increase again.

Due to the school-leaving last summer of young people from the first big birth rate year of a post-war baby boom the unemployment figures had risen.

While production capacities in the consumer goods industry are virtually fully utilised, large sectors of the capital goods industry are operating at well below capacity.

What we need is more demand for plant and machinery, cement factories, steel mills, ships, nuclear power stations, aircraft and complete industrial complexes.

Wage increases will do nothing to boost such demand but will in fact reduce it due to rising production costs.

Walter Slotoch (Städteutsche Zeitung, 10 December 1977)

Job prospects just as poor next year

Work volume next year will be slightly down on 1977, says the HWWA Institute for Economic Research in Hamburg.

According to HWWA, employment decreased this year following a brief rise. This change of trend coincided with the overall stagnation of production in the spring.

On the other hand, the year 1978 showed that even in today's slump economic growth is a suitable means of increasing employment.

In 1977 both components of work volume — working hours and the number of people employed — diminished slightly.

In some sectors, as for instance in the automobile industry, the service industries and the State, employment increased.

As a result, the number of unemployed, which had fallen in 1976, began to increase again.

Due to the school-leaving last summer of young people from the first big birth rate year of a post-war baby boom the unemployment figures had risen.

However, this figure is in fact somewhat higher in view of the fact that young people looking for an apprenticeship are not listed in official statistics.

The number of apprenticeships available is still inadequate and there is a disparity between supply and demand in the production sector and excess demand in the service industry.

The number of job vacancies listed in official statistics, which has been slipping at around 200,000 for the past few years, is likely to be twice that figure.

There, too, we have a considerable discrepancy between supply and demand.

But the Federal Labour Office's job-finding diminishes in direct proportion to rising qualifications of its staff wanted.

The actual development of employment depends on such hard-to-predict elements as labour supply and outflow of labour due to foreign workers returning to their own countries.

If this latter element outweighs the former, thus providing some relief for the labour market, the average unemployment figure for 1978 will be the same as in 1977, namely 1.03 million.

Frankfurt, 14 December 1977

COMMON MARKET

EEC summit reaches agreement on new unit of account

The nine EEC heads of government wrapped up their Christmas gift just in the nick of time.

The publicity with which the Nine celebrated their courageous decision was such as to make one believe that they had taken a giant step towards a European currency which would make us forget all the wriggings of the Snake.

But in actual fact we are no closer to a monetary union than before.

The new accounting unit replaces the old one, which used to be equal in value to the American dollar and which, in 1971 when the good world of fixed exchange rates was shattered, retained the parity of the time.

Thus the pound was still worth nine deutschmarks in Common Market accounting terms at a time when it fetched a mere four deutschmarks on foreign exchange markets.

Bonn Finance Minister Hans Apel has for some time been irked by this blatant disregard for the ever-rising value of the deutschmark.

But, if the Germans were to pay less, it was obvious that the others would have to fork out that much more.

But the British refused out of hand to bear the additional cost, pointing to a clause in their membership treaty whereby the increase of their contribution to EEC coffers in 1978 and 1979 was to be limited.

The new members who joined in 1973 (Britain, Ireland and Denmark) will in any event only have to bear their full share of the financial burden as of next year, as stipulated in their membership treaties.

The tug-of-war about adapting the EEC units of account to existing exchange rates has turned more and more into a private war between London and Bonn.

The egotism and stubbornness of Britain in connection with a number of other Community issues so upset the other members — except Ireland, which is in the same boat as Britain — that they all backed Bonn although, on the surface, there was much that spoke in favour of Britain.

Were the poor British to dip deeper into their till in favour of the rich Germans?

The relevant clause of the membership treaty is ambiguous inasmuch as it fails to state whether the limitation of the British contribution is meant in accounting units (as interpreted by Bonn)



or in national currency (as maintained by the British).

The Finance Ministers failed to sever this Gordian knot. But they were reluctant to take the issue to the European Court in Luxembourg.

London was unwilling to give an inch because it has become a matter of principle with Britain not to neglect its own interests in favour of the Community — especially when this would entail the painful business of spending money.

Bonn on the other hand had grown weary of this British attitude and considered its demand for a new accounting unit perfectly equitable.

As the Dutch prime minister at the time, Joop den Uyl, put it, the nine heads of government to whom the Finance Ministers had turned over the matter after reaching the end of their tether had achieved a "miracle of pragmatism" by finally reaching agreement.

Having introduced the new accounting unit, they left it to each member nation to fix its own contribution to the Community budget.

In the final analysis, this means that the DM 1,000 million which the Germans no longer want to pay and which the British are not yet prepared to pay remains in the balance.

Our pragmatic heads of government decided that this remainder is to be divided up according to four different sets

of possible apportionment plans and that each member should choose the most favourable of these plans.

But even so, there still remains a remainder and the game could well go on for a while longer.

The pragmatism of the heads of government enabled both sides to arrive at this compromise without loss of face.

Bonn's contribution to the EEC budget for 1978, which the European Parliament will probably fix at about 12,300 million accounting units (DM 33,000 million), will amount to about DM 10,000 million or 31 per cent.

The new accounting unit, which was agreed upon on 6 December, is actually almost three years old — as is its bigger sister, namely the Special Drawing Right of the International Monetary Fund.

The new-look EEC unit of account consists of nine EEC currencies, the parities of which are fixed according to their share in exports between 1969 and 1973.

One new unit of account consists of 82.8 pfennigs, 8.85 pence, 1.15 French francs, 109 Italian lire, 28.6 Dutch cents, 3.66 Belgian francs, 21.7 Danish öre, 0.759 Irish pence and fourteen Luxembourg centimes.

All this having been computed into actual exchange rates, the value of an accounting unit on 9 December amounted to DM 2.588.

On 1 February 1977 this figure was

DM 2.688. This is the exchange rate which has been fixed for the 1978 EEC budget.

But the actual saving to Germany is out of keeping with this difference, and this is not only due to the special arrangement arrived at with Britain for the next two years.

Eventually — unless Britain proves obstructionist again — the apportionment plans for the EEC budget will provide a certain balance.

Those who, like Germany, have to pay less for a new accounting unit will have to bear a greater share of the budget since their economic potential will have a bearing on the exchange rate.

Due to this automatic balancing process, the other members were able to view the Anglo-German tug-of-war (which in any event applies only to the next two years) with a certain equanimity.

Even if the introduction of the new accounting unit is by no means a brilliant event, it nevertheless took the European Community a step further — not only because of the expansion of the European Regional Fund but also because the calculation of contributions to the budget according to VAT revenue has thus been blocked.

The confusion caused by differing exchange rates in all sorts of EEC transactions has also come to an end — though with one exception: agriculture prices are still converted into manipulated "green" currencies, which has forced Agriculture Ministers to engage in the most curious acrobatics.

But the latest EEC summit has brought us not one bit closer to the eventual objective of a European currency. Even if the new accounting unit were to provide a fine currency, such a currency, if it is to be circulated, would still require a genuine European Central Bank.

But no miracle of pragmatism on the part of our heads of government can bring about such a central bank as long as Europe acts along the lines of Shakespeare's "As You Like It" and a common currency will remain as distant as ever.

Petra Schelinski (Deutsche Zeitung, 16 December 1977)

Two-per-cent increase in farm prices

The public frequently regards the farmer as being responsible for the high cost of living.

That makes life so expensive is the relatively riskless route agriculture produces takes from the farmer via the wholesaler and the retailer to the consumer.

Granted, our farmers have never produced with such a disregard for market requirements as under the EEC with its guaranteed prices.

This is an enormous incentive to produce as much as possible since the Brussels price system knows no limits.

This might be a somewhat heretical view, but surpluses are still cheaper (and put all our minds at rest) than both some and costly supply bottlenecks.

Moreover, the extent of the stockpiles is usually overestimated.

Europe's agriculture has been considered the pillar of the integration process ever since the inception of the Community twenty years ago.

The tiny crumb of additional revenue granted to the farmers will cost the consumer a mere one half of one per cent.

Anyway, the Green Front is unlikely to collapse because of the low prices fixed by Brussels.

Helmut J. Weiland (Nordwest Zeitung, 13 December 1977)

## SCIENCE

## Heidelberg astronomers probe secrets of the Universe



Heidelberg astronomers have made observations which seem to indicate that stars originate as dense layers of dust, which also serves as the basic material in the birth of planets.

The light emanating from a star that has come into being in the centre of such a dust layer reaches Earth on a direct route in a considerably diminished form. The decisive factor, it is claimed, is the light reflected sideways, which is heavily polarised as a result of a detour.

As far back as two years ago, astronomers of the Heidelberg Max Planck Institute of Astronomy working at the German-Spanish observatory atop Calar Alto in the province of Almería, Southern Spain, proved the existence of nascent stars still surrounded by clouds of dust.

An infra-red camera developed at the Heidelberg institute enabled scientists to penetrate the clouds of dust by means of long-wave light.

A few months later, using the same method, astronomers discovered new galaxies closer to our own. Obscured by clouds of dust in the Milky Way, these galaxies appeared as diffuse objects with a heavy red tinge.

Radioastronomers, too, are now increasingly directing their attention to the analysis of stars in the making. As a result a number of areas in which such stars are taking shape have been discovered and are now the focal point of attention at the Max Planck Institute.

It is these stars through which new insights have been gained, but they would not have been possible without the development of new measuring techniques.

Thomas Schmidt, Bodo Schwartz and Klaus Proetel, in cooperation with electronic and precision instruments workshops, have developed new instruments for the exact measurement of brightness — in other words, photometry — and for the determination of the frequency direction of the light captured (polarisation measurements) with which they are carrying out extensive readings in the vicinity of nascent stars.

When these instruments were put to use at the 1.2-metre telescope on Calar Alto, the three above-mentioned scientists arrived at startling results in their observations.

In the dust layer W 3 there are objects with an unusually high proportion of polarised light, amounting to as much as sixteen per cent. In the M 17 dust layer polarisation proportions reached an amazing 26 per cent, and there was a surprising uniformity in the direction of polarisation planes.

According to Hans Elsässer, director of the Heidelberg institute, attempts to explain the high proportion of polarised light by means of dust clouds that are obscuring the light rays seem fairly improbable.

He considers it more likely that the star, in other words the source of the light, is embedded in a dense, disc-like cloud of dust. This cloud of dust lies in the direction of the viewer, thus permitting only small quantities of light to

reach him. The observed light consists primarily of those rays which the star exudes to both sides of the dust disc.

In such places there is a dent in the dust disc shaped like a thin cloud which reflects the light at a ninety-degree angle, and this accounts for the high degree of polarisation. It seems evident that this cloud consists of matter that has been hurled sideways.

This interpretation is pretty much in keeping with theoretical ideas concerning the birth of a star within a planetary system.

A mass of dust begins to rotate, forming a flat disc in the centre of which there occurs a concentration which gives rise to the creation of a star. Planets form on the outskirts of the rotating dust disc.

Subsequently, the light rays of the young stars hurl the material not utilised in forming the star and the planets into space, and eventually the star is seen in its full brightness.

The fact that a number of cosmic objects which are close enough to make their bipolar structure discernible seems to indicate that the dust disc theory of the Heidelberg astronomers is rather plausible.

Thus, for instance, there are two bright dust areas in the so-called Egg Fog with a seventy-per-cent proportion

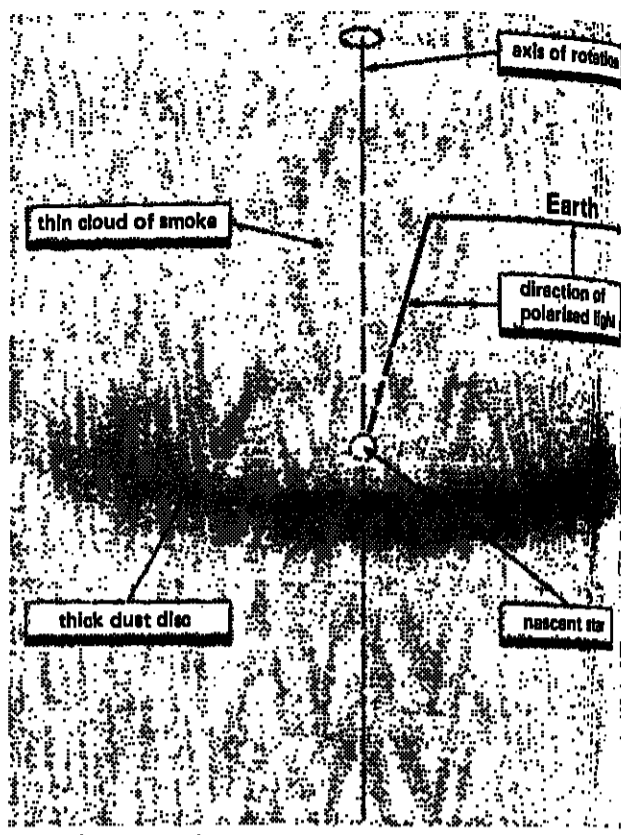
of polarised rays. In between there is a dark area which evidently obscures the central star through heavy layers of dust. The fact that in W 3 and M 17 the rotation axes of the bipolar dust discs are very uniform in direction — in W 3 they are virtually all perpendicular to the galactic plane — seems to indicate a uniform stimulus mechanism, in other words, the rotation of the dust discs and thus the creation of stars and planetary systems must be triggered by a common mechanism such as a shock wave running through the Milky Way system.

Neighbouring the W 3 area there are the somewhat older areas W 4 and W 5. It is assumed that the shock wave reached W 5 and W 4 first, subsequently reaching W 3 and ushering in the process that gave rise to the birth of the star there. The situation is somewhat more complicated with regard to M 17.

The phenomenon of the bipolarity could thus be typical for certain phases in the coming about of stars. Moreover, young stars frequently appear bedded in flat dust discs.

The formation of planetary systems therefore probably a rather frequent occurrence and there is every likelihood that the universe contains more planetary systems than hitherto assumed.

(Süddeutsche Zeitung, 9 December 1977)



How Heidelberg astronomers reckon stars are born

(Photo: WZ)

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(Süddeutsche Zeitung, 9 December 1977)

## Versatile particle accelerators

Once in a while particle accelerators make headlines. Generally, these headlines are related to the discovery of a new element — and it is always the same large-scale accelerators that are mentioned.

In Western Europe these are usually those of the European Nuclear Research Centre (CERN) in Geneva or the DESY electron synchrotron in Hamburg.

It would appear as if only these major installations matter. But in actual fact, says nuclear physicist Dr Josef Ney, professor at the Technical University in Berlin, many small accelerators installed in numerous universities and research institutes play a more important role in everyday life.

Professor Ney, for instance, has a compact cyclotron, a roughly circular accelerator for hydrogen and helium nuclei, at his disposal.

His accelerator is propelled by a fifty-kw FM transmitter which is considered a strong unit even in radio terms. This achieves an energy of twenty million electron volts which equals about one-fifth of the speed of light.

Such a speed can circle the equator three times within a span of a mere two seconds.

The relatively small so-called compact cyclotrons are by no means a rarity. Baden-Württemberg alone has about ten of them, according to Professor Ney's estimates. They are used not only to train students but also assist in many fields of technology.

For the physicist-to-be work on a cyclotron is an activity involving many sectors of science.

In order to engage in nuclear experiments by means of an accelerator, students must familiarise themselves with vacuum technology, electronics, data processing, high-frequency technology as

well as the various regulations governing protection from radiation.

Thus for instance, by bombarding lithium, beryllium and a number of other metals with hydrogen nuclei it is possible to trigger nuclear reactions within the cyclotron which lead to highly penetrating neutron rays.

Such reactions have the property of inflicting heavier damage to certain cancer cells than to healthy tissue, and are thus suitable as a means of cancer therapy. This type of therapy is already being practised in Heidelberg, in Rijswijk, Holland and in the United States.

Purpose-oriented nuclear reactions by means of cyclotrons enable man to produce short-lived radioactive substances which are steadily gaining in importance in the field of diagnosis and medical research.

The objective in both instances is to identify radio isotopes through their radiation and to follow their course in the human body. This enables physicians to check the function of individual organs and thus arrive at an early diagnosis of a considerable number of ailments.

It is therefore important to have cyclotrons located in the vicinity of clinics. Experts in nuclear medicine have a vested interest in the use of short-lived radio isotopes which have no lasting detrimental effect on the patient.

Because they are short-lived they preclude the possibility of transporting them over long distances.

Ideally, says Professor Ney, such iso-

topes should be used within a few hours after having been produced.

In other cases it suffices to mark certain substances by injecting them with molecules of ray-emitting isotopes of an existing chemical element.

Thus for instance dentists would like to know whether fluoride actually is the properties attributed to it by toothpaste advertisements.

Experts differ on the question whether fluoride prevents caries, whether it should be added to drinking water or whether it is absorbed by tooth enamel. This question is now to be clarified in Berlin by means of "marked" fluoride. Professor Ney hopes to be commissioned to provide the necessary radio isotopes.

So far, dentists have used arsenic to destroy nerves. Alas, it is still unknown how much of this arsenic enters the patient's body. This question, too, can be clarified by means of marked arsenic.

Even pharmacology can expect to gain new insights through radio isotopes which would enable experts to follow the route of a marked drug through the body.

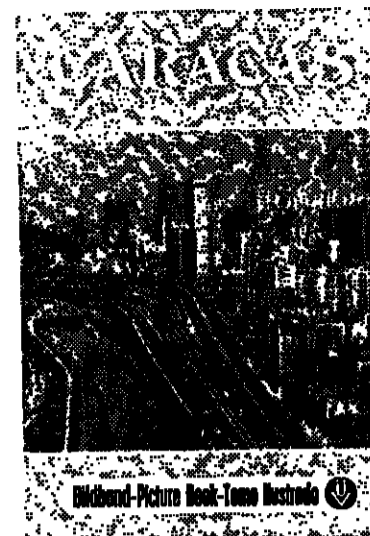
But cyclotrons can also play an interesting role in criminology by enabling experts to activate certain speeding substances. Subsequent analysis can prove the presence of substances amounting to less than one-billionth part of a gram.

Tiny paint splinters after a traffic accident involving a hit-and-run case, for instance, can thus provide important clues as to the manufacturer of the paint.

Meanwhile, the use of cyclotrons also proved its worth in establishing the origin of metals used in antique coins.

Tiny but typical additives which are used in the production of...

Continued on page 14



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## ■ ARCHAEOLOGY

## Tübingen archaeologists unearth Ice Age site

Little or nothing was known about the Ice Age inhabitants of West Germany until Joachim Hahn and a team of Tübingen University archaeologists started digging at Lommersum, near Euskirchen.

Traces of human habitation dating back to the end of the Ice Age had been found, but not of the millennia of the Ice Age proper — apart, that is, from cave dwellers in an isolated area of the Swabian Alb.

At the end of the Ice Age, when the Baltic was still full of shifting glaciers, packs of hunters are known to have lived in the Eifel mountains, near Cologne, and in the vicinity of Hamburg.

They set up their tents as they travelled around, staging major religious festivals from time to time.

All told, however, the distribution of finds creates the impression that the wide open countryside between the glaciers to the north and south was uninhabited, which was surely not the case.

In point of fact the chilly steppes between the glaciers must have been full of large animals and a happy hunting ground for the people who occasionally dwelt in South German caves.

Yet few traces of Ice Age habitation have been found, and for a good reason. Such traces as there may have been were destroyed by the ravages of the climate.

Ice Age Germany was a circumglacial zone in which permafrost began just below ground level, whereas the soil at

surface level was in a continual state of flux.

Rainwater was unable to percolate down to the water table. For thousands of years it just washed around the surface, churning up hills and silted up dunes and destroying virtually without trace such testimony as might have remained to the life and times of Ice Age Man.

This makes Dr Hahn's dig at Lommersum in the Eifel hills all the more exciting. The Eifel hills, south of Cologne, slope down to the Rhine in the east and the Moselle in the south and the dig is located on a terraced bank of the Ice Age Rhine.

Over a period of years Dr Hahn and his Tübingen archaeologists have pieced together traces of Ice Age hunters who lived here 32,000 years ago, to judge by carbon dating techniques.

It was the last cold spell of the Ice Age following a warmer period. The weather was cold and dry. The vegetation, to judge by traces of charcoal and pollen, cannot have been any too inviting.

The Ice Age Rhineland was an almost treeless grass-covered tundra sporting occasional dwarf birch and willow trees.

A farmer and amateur archaeologist first discovered the Lommersum site. Coming across unusual white-edged flint artifacts he realised that he had found something special and reported his find to the authorities.

It soon transpired that these flint utensils were tens of thousands of years old and had belonged to Ice Age Aurignac Man.

Subsequent excavations revealed that the village, or whatever it might have been, had only been preserved in part, the kitchen and workshops having escaped destruction by being midway between high ground which was eroded and low ground that was silted up.

Any traces of tents or huts had long since disappeared. Living quarters appear to have been further uphill on land that was later eroded.

So no one knows how large this community of Ice Age hunters was, but they certainly left behind heaps of bones and antlers of their quarry — reindeer, for the most part.

Ice Age Man is known to have camped here three times over a period of several decades, slaughtering between twenty and fifty reindeer at a time. He also appears to have hunted wild horses and bears too must have been in evidence; a solitary bear's tooth was found among the bones. The flint utensils were used mainly to strip and cut the carcasses.

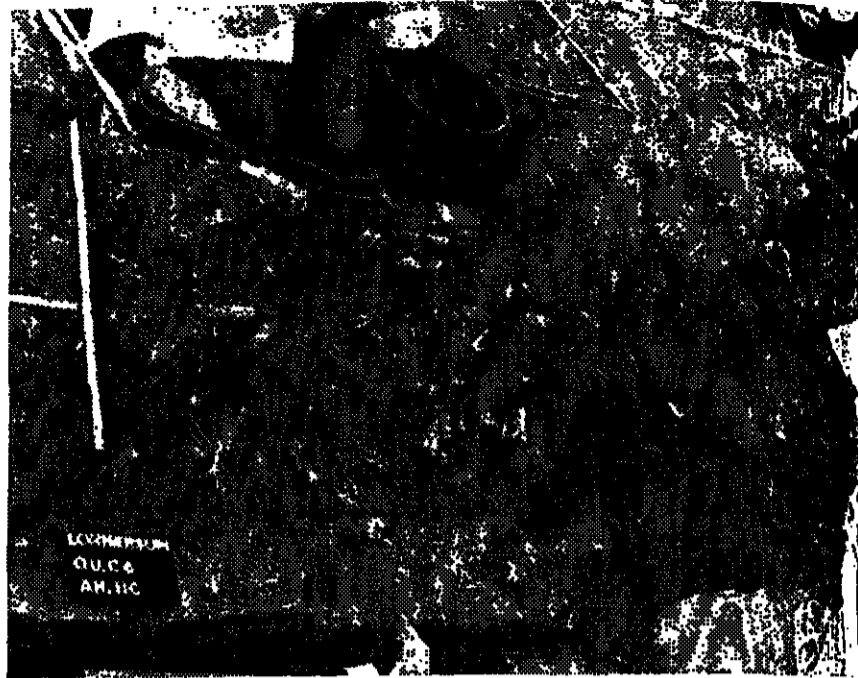
The flint came from a site about twenty miles away, which was no distance for the nomadic hunters of Lommersum 32,000 years ago.

It is hard to see why they should not have done so. Maybe reindeer were easier quarry. Maybe, for that matter, the mammoth did not graze in pastures around these parts.

A further teaser is the deep red colouring of the soil around the fires, evidently caused by ferrous oxide, a natural dye used elsewhere in religious rites.

At Lommersum it would seem to have been used either to impregnate reindeer hides or to preserve reindeer meat.

Should further evidence be unearthed in the course of evaluation of the Lommersum finds we may learn more about the techniques known to our forebears 32,000 years ago.



Fireplaces and kitchen middens at Lommersum in the Eifel hills testify to human habitation by the banks of the Ice Age Rhine. (Photo: Universität Tübingen)

## Roman Xanten rebuilt in open air

Frankfurter  
Neue Presse

Were the Roman city of Xanten to be rebuilt on its sunken foundations it would look for all the world like Dodge City or any number of Western film sets.

Archaeologists are convinced that the Ancient Romans built their city on the Rhine with two-storey buildings and covered wooden pavements or arcades of the kind we associate with American Wild West.

At the end of the first season during which Xanten open-air museum was open to visitors Dr Christoph Rüger, curator of the *Rheinisches Landesmuseum*, Bonn, told journalists that this "Western look" would be resurrected solely in the form of two facades facing one another.

The further reconstruction of the city known to the Romans as Colonia Ulpia Traiana will, he stated, be aimed mainly at reconstructing as many aspects as possible of everyday life in Ancient Rome in an open-air atmosphere.

The open-air museum will eventually include the first complete harbour dating back to the ancient world to be reconstructed north of the Alps.

The Roman city is now some distance from the Rhine but 1,800 years ago it was a major port. A twenty-foot length of wooden quayside has already been excavated and only recently a three-foot length of rope came to light.

It will, however, be years before the harbour has been reconstructed complete with ships and cranes as used in the days of Emperor Trajan.

Enormous quantities of gravel must first be dredged and bulldozed away. What is more, a complete trunk road, the *Bundesstrasse 57*, must be reconstructed.

Local people are enthusiastic; their imagination has been fired. Since the museum was opened to the public in June 182,000 members of the public have passed through the turnstiles.

Next year a quarter of a million visitors are expected to come from all over the country and neighbouring Holland.



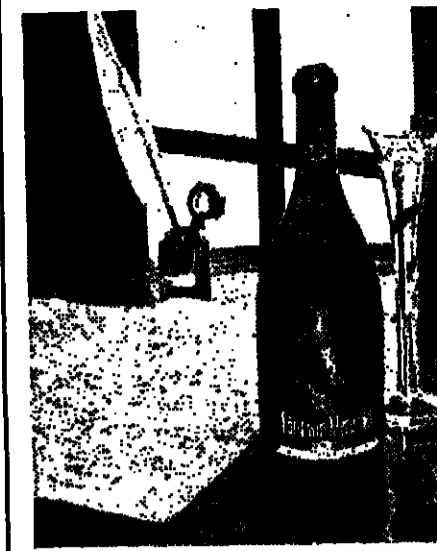
Ancient Roman brickwork forming part of the foundations of the harbour gate at Xanten on the Rhine in the second century AD. (Photo: Landschaftsverband Rheinland/Rheinisches Landesmuseum Bonn)



### BRASS GIFTWARE

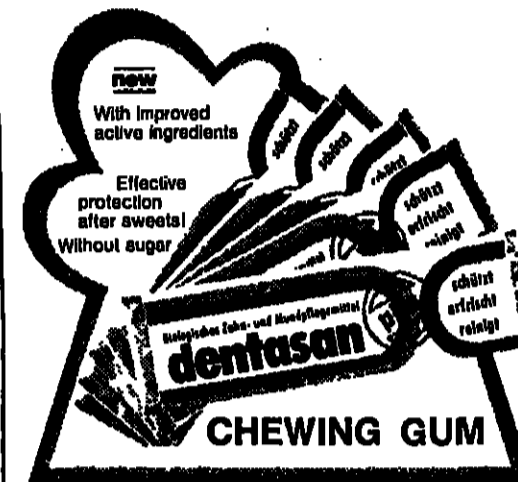
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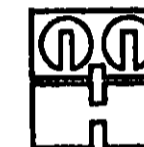
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## Neanderthal museum in Düsseldorf

Neanderthal Man, our paleolithic forebear of between 60,000 and 100,000 years ago, is named after an outer suburb of Düsseldorf where the original bones were found in a disused quarry.

All that remains near the site is a modest museum including an enclosure where the prehistoric bison and aurochs graze.

Local authorities have now decided to invest 2.4 million Deutschmarks in a Neanderthal museum of Ice Age fossils and research centre attached to the department of prehistory and early history at Cologne University.

The costs will be shared equally by North Rhine-Westphalia, the Rhineland regional authority, the cities of Düsseldorf and Wuppertal and the administrative district of Mettmann.

The museum will feature all manner of flora and fauna with which Neanderthal Man will have been acquainted. The original skull, however, will stay on exhibit at the *Rheinisches Landesmuseum* in Bonn.

Neanderthal Man is not the only, still less the oldest, Stone Age man of whom traces have been found in the Rhineland. Stone utensils found near Mönchengladbach are more than 100,000 years old, but no one yet knows who used them.

Oddly enough, the one skull is the only trace of Neanderthal Man to have been found in the Rhineland. He seems, however, to have been a frequent cave-dweller in prehistoric France.

(Frankfurter Allgemeine Zeitung für Deutschland, 7 December 1977)

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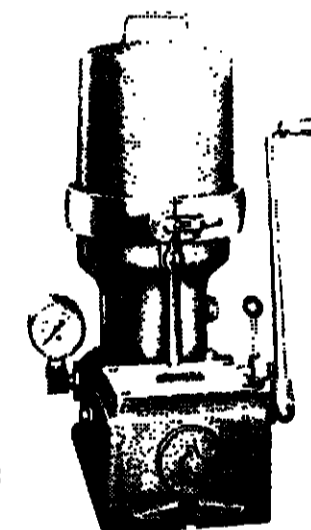
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